

In the Claims:

Please amend the claims as follows:

1. (Cancelled).

2. (Currently Amended) A composition of matter, comprising: a polymer matrix  
including polymer chains having a plurality of carbon-fluorine bonds; and a plurality of quantum  
dots distributed within the polymer matrix~~The composition of matter of claim 1~~, wherein the  
quantum dots include comprise at least one organic cap compound including comprising at least  
one aromatic group.

3. (Currently amended) The composition of matter of claim 5 ~~claim 1~~, wherein the  
polymer matrix includes comprises a perfluorocyclobutane polymer.

4. (Currently amended) The composition of matter of claim 5 ~~claim 1~~, including a  
~~wherein each polymer chain that includes~~ comprises at least 10 repeat units and ~~that~~ [(b)] is  
cross linked at least twice to at least one of the other polymer chains.

5. (Currently amended) A composition of matter, comprising: a polymer matrix  
including polymer chains having a plurality of carbon-fluorine bonds; and a plurality of quantum  
dots distributed within the polymer matrix~~The composition of matter of claim 1~~, wherein the  
polymer chains include comprise aromatic groups.

6. (Currently amended) The composition of matter of claim 2 ~~claim 1~~, wherein the quantum dots include ~~comprise~~ at least one organic cap compound and neither the quantum dots nor the cap compounds of the quantum dots are covalently bound to the polymer matrix.

7. (Currently amended) The composition of matter of claim 5 ~~claim 1~~, wherein the polymer matrix includes ~~comprises~~ a number  $N^A$  aliphatic carbon-hydrogen bonds and a number  $N^T$  total bonds, the ratio  $N^A/N^T$  being less than about 0.4 ~~about 0.3~~.

8. (Currently amended) An optical waveguide comprising the composition of matter of claim 2 ~~claim 1~~.

9. (Original) An optical waveguide, comprising: an optical core comprising: a polymer matrix comprising polymer chains having a plurality of carbon-fluorine bonds; and a plurality of quantum dots distributed within the polymer matrix of the optical core.

10. (Original) The optical waveguide of claim 9, wherein the waveguide is a one-dimensional waveguide.

11. (Currently amended) The optical waveguide of claim 9 ~~claim 15~~, wherein the quantum dots are capable of absorbing energy and emitting photoluminescence.

12. (Original) The optical waveguide of claim 9, wherein the quantum dots comprise at least one organic cap compound comprising at least one aromatic group.

13. (Original) The optical waveguide of claim 9, wherein the polymer comprises a number  $N^A$  aliphatic carbon-hydrogen bonds and a number  $N^T$  total bonds, the ratio  $N^A/N^T$  being less than about 0.3.

14. (Original) The optical waveguide of claim 9, wherein the polymer chains comprise aromatic groups.

15. (Withdrawn) A method of preparing an optical waveguide, comprising: combining a polymerizable resin and a plurality of quantum dots to prepare a mixture, the polymerizable resin comprising molecules having a plurality of carbon-fluorine bonds; and initiating polymerization of the polymerizable resin.

16. (Withdrawn) The method of claim 15, wherein the polymerizable resin includes at least one of a monomer and an oligomer, the at least one of a monomer and an oligomer comprising a plurality of aromatic groups.

17. (Withdrawn) The method of claim 15, wherein, upon polymerization, the polymerizable resin forms a polyfluorocyclobutane polymer.

18. (Withdrawn) The method of claim 15, wherein the quantum dots comprise at least one organic cap comprising at least one aromatic group.

19. (Withdrawn) The method of claim 15, wherein the polymerizable resin comprises a number  $N^A$  aliphatic carbon-hydrogen bonds and a number  $N^T$  total bonds, the ratio  $N^A/N^T$  being less than about 0.3.

20. (Withdrawn) The method of claim 15, comprising coating a surface with the mixture.

21. (New) The composition of matter of claim 2, in which the organic cap compound includes fluorine.

22. (New) The composition of matter of claim 2, wherein the polymer chains include aromatic groups.

23. (New) The composition of matter of claim 2 wherein the polymer matrix includes a number  $N^A$  aliphatic carbon-hydrogen bonds and a number  $N^T$  total bonds, the ratio  $N^A/N^T$  being less than about 0.4.

24. (New) The composition of matter of claim 2, in which the polymer matrix includes a cyclic group having at least 3 carbon atoms.

25. (New) The composition of matter of claim 5, in which the polymer matrix includes a cyclic group having at least 3 carbon atoms.

26. (New) The composition of matter of claim 5, wherein the quantum dots include at least one organic cap compound and neither the quantum dots nor the cap compounds of the quantum dots are covalently bound to the polymer matrix.

27. (New) An optical waveguide comprising the composition of matter of claim 5.

28. (New) A composition of matter, comprising: a polymer matrix including polymer chains having a plurality of carbon-halogen bonds; and a plurality of quantum dots distributed within the polymer matrix, wherein the polymer chains include aromatic groups.

29. (New) The composition of matter of claim 28, wherein the quantum dots include at least one organic cap compound including at least one aromatic group.

30. (New) The composition of matter of claim 29, in which the organic cap compound includes a halogen.

31. (New) The composition of matter of claim 28, in which the polymer matrix includes a cyclic group having at least 3 carbon atoms.

32. (New) The composition of matter of claim 28, wherein the polymer matrix includes a perfluorocyclobutane polymer.

33. (New) An optical waveguide comprising the composition of matter of claim 28.